



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,183	10/31/2003	Jean Luc Sibiet	A01460	9914

21898 7590 05/23/2006

ROHM AND HAAS COMPANY
PATENT DEPARTMENT
100 INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19106-2399

EXAMINER

KINNEY, ANNA L

ART UNIT	PAPER NUMBER
----------	--------------

1731

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/698,183

Applicant(s)

SIBIET ET AL.

Examiner

Anna Kinney

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks, pg. 4, filed March 20, 2006, with respect to the rejection(s) of claim(s) 1-10 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Modebelu et al (U.S. 6,217,621) and Barbe et al.

Applicant's arguments filed March 20, 2006, with respect to the rejection of claims 1-2 under obviousness-type double patenting have been fully considered but they are not persuasive. Application 10/465,433, now U.S. Patent 7,029,554, provides the most restrictive application rates in claim 8 (as allowed). Converting the mass amounts to moles, 1 kg sodium borohydride represents 26.4 moles; 15-25 kg sodium bisulfite represents 144-240 moles; and 1-10 kg NaOH (from claim 1 as allowed) represents 25-250 moles. For purposes of comparison, the Examiner calculated the molar ratios of (bisulfite – hydroxide) / borohydride from the endpoints, disregarding values below zero, as discussed in applicant's previous Remarks. The range represented by Application '433 / Patent '554 is 0-8.1, which still encompasses the claimed ranges; with an intermediate data point at 4.5, which is one specific point within the claimed ranges of 4-7.8 for claim 1 and 4-7.5 for claim 2. This does not constitute an unreasonable burden of experimentation.

The declaration under 37 CFR 1.132 filed March 20, 2006 is sufficient to overcome the rejection of claims 1-10 based upon 35 USC 103(a). The declaration

establishes that if the reagents claimed are mixed in the molar ratios claimed, the resulting pH is below the pH required by the Hinckley reference by at least about 13%.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modebelu et al (U.S. 6,217,621) in view of Barbe et al (WO 90/11403).

With respect to claim 1, Modebelu discloses a method for preparation of hydrosulfite for treating fibers (col. 2, lines 39-44 and col. 1, lines 18-21) comprising combining: (i) an aqueous solution comprising sodium borohydride and sodium hydroxide (col. 2, line 65 – col. 3, line 1); and (ii) an aqueous solution comprising sodium bisulfite (col. 2, lines 10-14), mixed in an add tank, which the Examiner considers to be a chemical mixer, since chemicals are mixed in the add tank (; col. 3, lines 27-31); wherein a ratio of (moles bisulfite-moles hydroxide)/moles borohydride is from 4.8 to 8.8 (col. 3, lines 17-26; calculated from 8 to 12 mol bisulfite per mole borohydride – 3.2 mol hydroxide per mole borohydride [$\{37.8 \text{ g/mol NaBH}_4 \times 40\% \} / \{40 \text{ g/mol NaOH} \times 12\%\}$; col. 2, line 65 – col. 3, line 3]), which contains one specific point within the claimed range of from 4 to 7.8. Modebelu does not disclose expressly that this mixture is used on mechanical pulp.

Barbe et al discloses brightening mechanical pulp with hydrosulfite (p. 1, lines 8-18).

Modebelu and Barbe are analogous art because they are both directed to a similar problem solving area, that of treating cellulose fibers with the reducing agent, hydrosulfite.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the hydrosulfite of Modebelu to a mechanical pulp as described by Barbe to obtain the invention as specified in claim 1.

The motivation would have been that using a reducing agent such as hydrosulfite is the oldest process of bleaching mechanical and chemimechanical pulps to improve brightness levels, color or yellowness, and rapid reversion characteristics (Barbe, p. 1, lines 8-18).

With respect to claims 2, 4, and 9, Modebelu is applied as in the rejection to claim 1, above. The ratios contain one specific point within the claimed range of from 4 to 7.5 for claims 2 and 9, and encompasses the claimed range of from 5 to 7 for claim 4.

With respect to claims 3, 5, and 10, Modebelu discloses either mixing the reagents in an add tank, and then adding the mixture to the fibers, or mixing the reagents at the same time as applying them to the fibers (col. 3, lines 27-52). The Examiner construes this to mean that the output of the chemical mixer is added to the pulp slurry immediately, which is one point within the claimed range of within 12 hours of mixing for claim 3 and within 3 hours of mixing for claims 5 and 10.

With respect to claim 6, Modebelu and Barbe do not disclose expressly that the chemical mixer is an in-line static mixer, and the output of the chemical mixer is substantially homogeneous prior to addition to the pulp slurry. At the time of the invention, however, it would have been obvious to a person of ordinary skill in the art to mix the chemicals well (i.e., until substantially homogeneous), and to use any appropriate equipment known in the art to mix the chemicals. The motivation would have been to obtain as complete reaction as possible.

With respect to claim 7, Barbe discloses that the ratio of sodium borohydride to pulp is about 0.01 to about 1.5% (p. 4, lines 12-18 and p. 5, lines 27-35), which encompasses the claimed range of from 0.015% to 0.12%. Modebelu also discloses that the amount of borohydride used is from about 0.1 to about 0.3% by weight (col. 2, lines 60-64), which contains one specific point within the claimed range of from 0.015% to 0.12%, and said aqueous solution comprising sodium borohydride and sodium hydroxide comprises about 12% sodium borohydride and about 40% sodium hydroxide (col. 2, line 65 – col. 3, line 1).

Modebelu does not disclose expressly the use of a chelant.

With respect to claim 8, Barbe discloses addition of at least one chelant to the pulp slurry (p. 4, lines 12-20).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use application rates and a chelant as described by Barbe when using the hydrosulfite composition of Modebelu.

The motivation would have been that use of a chelating agent to remove naturally occurring trace metals is recommended (Barbe, p. 1, lines 26-29).

With respect to claim 9, Modebelu is applied as in the rejection to claim 2, above.

Claims 3-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modebelu and Barbe, as applied to claims 1, 2, 8, and 9 above, and, if necessary, further in view of Ellis et al.

With respect to claims 3 and 10, Modebelu and Barbe do not disclose the time from mixing to application. However, Modebelu does disclose mixing the chemicals immediately before or during application to fibers, as discussed above.

Ellis discloses that sodium dithionite solutions have an extremely short storage life, and decompose at about 20% per hour (col. 2, lines 1-7).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a hydrosulfite mixture generated in-situ (as described by Ellis) as soon as possible after mixing in the preparation and pulp brightening process of Modebelu and Barbe to obtain the invention as specified in claims 3 and 10.

The motivation would have been that the decomposition proceeds rapidly to completion (Ellis, col. 1, lines 40-46).

With respect to claim 4, Modebelu is applied as in the rejection to claim 2.

With respect to claim 5, Ellis is applied as in the rejection to claim 3.

With respect to claim 6, Modebelu, Barbe, and Ellis do not disclose expressly that the chemical mixer is an in-line static mixer, and the output of the chemical mixer is substantially homogeneous prior to addition to the pulp slurry. At the time of the

Art Unit: 1731

invention, however, it would have been obvious to a person of ordinary skill in the art to mix the chemicals well (i.e., until substantially homogeneous), and to use any appropriate equipment known in the art to mix the chemicals. The motivation would have been to obtain as complete reaction as possible.

With respect to claim 7, Barbe discloses that the ratio of sodium borohydride to pulp is about 0.01 to about 1.5% (p. 4, lines 12-18 and p. 5, lines 27-35), which encompasses the claimed range of from 0.015% to 0.12%. Mobedelu also discloses that the amount of borohydride used is from about 0.1 to about 0.3% by weight (col. 2, lines 60-64), which contains one specific point within the claimed range of from 0.015% to 0.12%, and said aqueous solution comprising sodium borohydride and sodium hydroxide comprises about 12% sodium borohydride and about 40% sodium hydroxide (col. 2, line 65 – col. 3, line 1).

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modebelu and Barbe, with or without Ellis, as applied to claim 5 above, and, if necessary, further in view of Sanglet (U.S. Patent 4,859,447).

With respect to claim 6, Sanglet discloses a method of production of sodium hydrosulfite in which the chemical mixer is an in-line static mixer (Fig. 2, item 18), and the output of the chemical mixer is substantially homogeneous prior to addition to the pulp slurry (col. 7, lines 65-68).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an in-line static mixer achieving a homogeneous mixture as described by Sanglet in the sodium hydrosulfite production and fiber treatment method

of Modebelu and Barbe, with or without Ellis, to obtain the invention as specified in claim 6.

The motivation would have been that sudden changes in composition and, more especially, pH, are avoided (col. 7, lines 65-68).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 2 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4 of U.S. Patent No.

7,029,554 (previously rejected as Application 10/465,433) in view of Modebelu, as applied the 35 USC 103(a) rejections to claims 1 and 2, above.

With respect to claims 1 and 2, U.S. '554 discloses a method for brightening virgin mechanical pulp (claim 4); said method comprising combining: sodium borohydride, sodium hydroxide, and sodium bisulfite; and adding output to an aqueous slurry of virgin mechanical pulp (claim 1); wherein a ratio of (moles bisulfite-moles hydroxide)/moles borohydride is from 0 to 10.0 (claim 1), which encompasses the claimed range of from 0 to 7.8 for claim 1 and the claimed range of from 4 to 7.5 for claim 2. Application '433 does not disclose expressly combining: (i) an aqueous solution comprising sodium borohydride and sodium hydroxide; and (ii) an aqueous solution comprising sodium bisulfite, in a chemical mixer. Modebelu is applied as in the rejection to claim 1, above.

At the time of the invention, it would have been obvious to combine two aqueous solutions as described by Modebelu in the brightening solution of Application '433 to obtain the invention as specified in claims 1-2. The motivation would have been that dithionite powder is inefficient and unreliable (col. 1, lines 34-37), and fresh dithionite may be produced by the reaction between sodium borohydride and sodium bisulfite (col. 2, lines 39-41).

Claims 1 and 2 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of copending Application No. 10/832,182 in view of Barbe. With respect to claim 1, Application '182 discloses a method comprising combining: (i) an aqueous solution

Art Unit: 1731

comprising sodium borohydride and sodium hydroxide; and (ii) an aqueous solution comprising sodium bisulfite (claim 1), to an aqueous slurry of pulp; wherein a ratio of (moles bisulfite-moles hydroxide)/moles borohydride is from 0 to 25 (claim 2), which encompasses and contains one specific endpoint from the claimed range of from 0 to 7.8. Application '182 does not disclose expressly that the method is for brightening virgin mechanical pulp, or that the chemicals are mixed in a chemical mixer. Barbe is applied as in the rejection to claim 1, above.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to mix the chemicals in a chemical mixer and use the method for brightening virgin mechanical pulp, as described by Barbe, in the method of Application '182 to obtain the invention as specified in claim 1. The motivation would have been to obtain as complete reaction of the borohydride as possible and that using a reducing agent such as hydrosulfite is the oldest process of bleaching mechanical and chemimechanical pulps to improve brightness levels, color or yellowness, and rapid reversion characteristics (Barbe, p. 1, lines 8-18).

With respect to claim 2, Application '182 discloses that the ratio is from 0 to 25 (claim 2), which encompasses the claimed range of from 4 to 7.5.

This is a provisional obviousness-type double patenting rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. 5,169,555 and U.S. 5,336,479 show production of sodium hydrosulfite solutions from sodium borohydride, sodium hydroxide, and sulfur-containing


compounds. U.S. 7,029,554 corresponds to application 10/465,433, which is applied in the double patenting rejection of claims 1 and 2, above, shows a method for brightening pulp with hydrosulfite solution generated from borohydride and bisulfite in a molar ratio of 0 to 13.2 (moles bisulfite – moles hydroxide) / moles borohydride.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALK


STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700